



ASTROPHYSICS™

ASTROPHYSICS

Innovative Imaging Security Technology



ASTROPHYSICS™

Company Profile

- Headquartered in the City of Industry, California, Astrophysics designs, manufactures, and assembles more than 2400 x-ray inspection systems each year
- Vertically integrated, Astrophysics manufactures, builds, and sources cabinets, electronics, and peripheral components in a sister facility in Ontario, California

Astrophysics factory employs more than 250 people in high technology jobs and is expected to add 30% job growth in 2018.





ASTROPHYSICS™

Comprehensive Global Support



- International Offices located in Lebanon, India, Hong Kong and the Philippines providing global service support capability and spare parts inventory for rapid response times
- International service network capable of providing on-site service and support for any critical location
- Indonesia service is handled by our factory trained service engineers by our local partner organization .



ASTROPHYSICS™

Trusted Partner to Several Agencies



Department of Defense



United Nations



Ministry of Transport
– Ben Gurion Airport



Department of State



Israeli Ministry of Defense



Army National Guard



FBI



Ministry of Defense, India



Air France



US Air Force



Department of Energy



Hilton Hotels



US Navy



Federal Bureau of Prisons



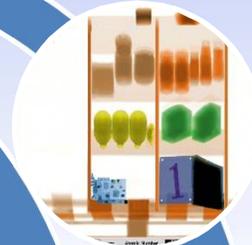
New York Yankees



ASTROPHYSICS™

Advanced Technology

- ✓ R&D Focus
- ✓ Service
- ✓ Safety



6 Color Imaging



Picture Perfect



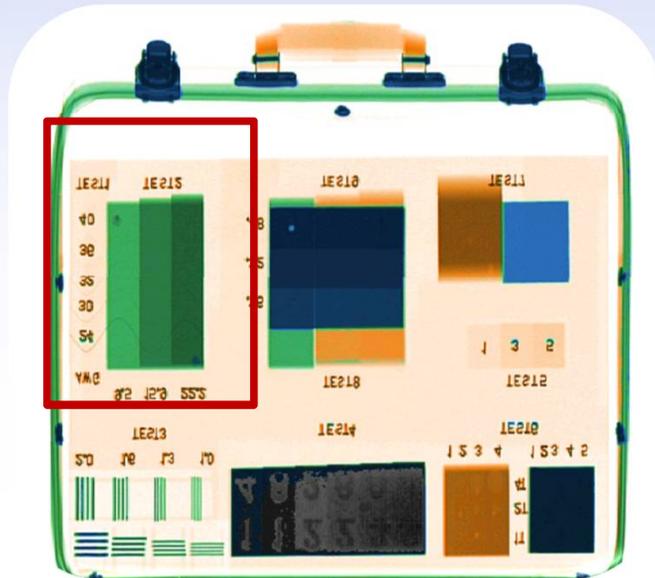
Real Time Diagnostics



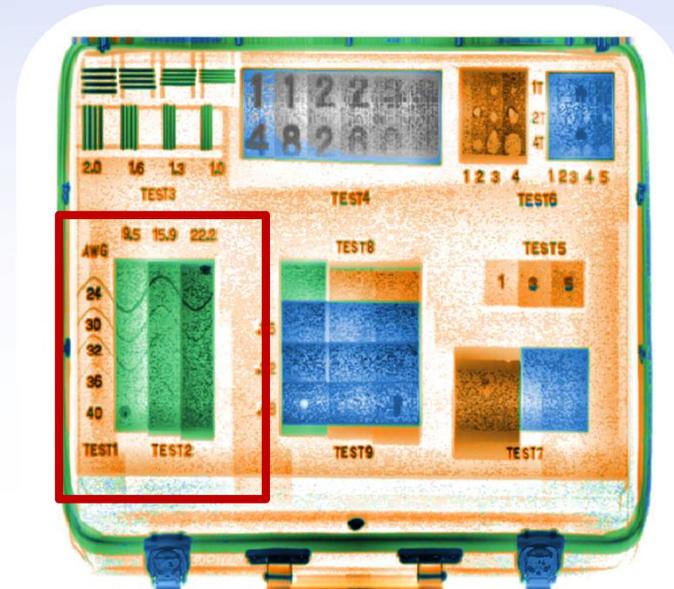
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Picture Perfect

Standard Image



Picture Perfect



***Histogram Equalization Technique*

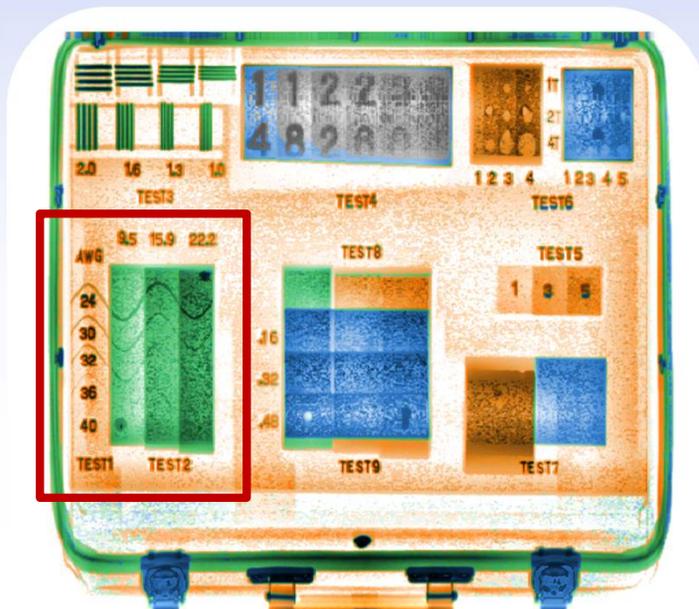
- ✓ Clarity
- ✓ Sharpness
- ✓ Enhance detail



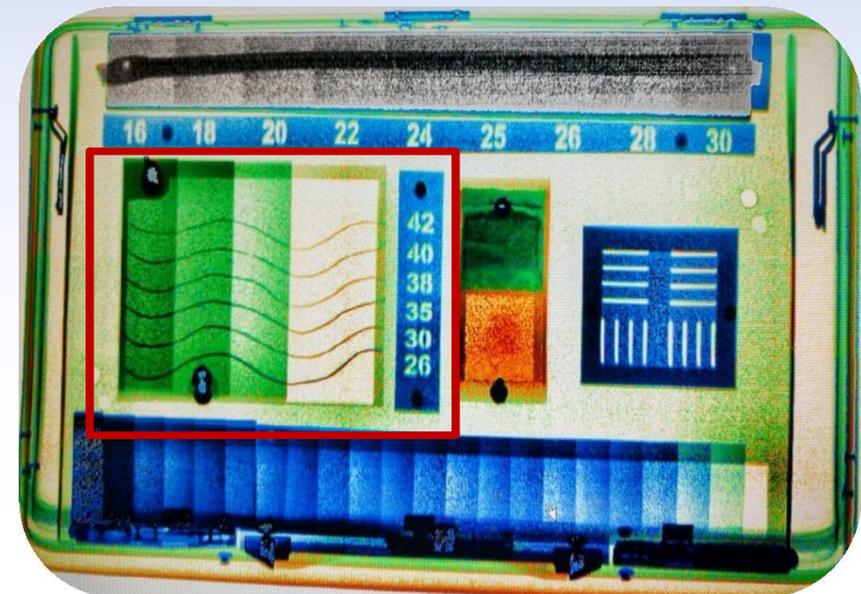
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Picture Perfect

Old



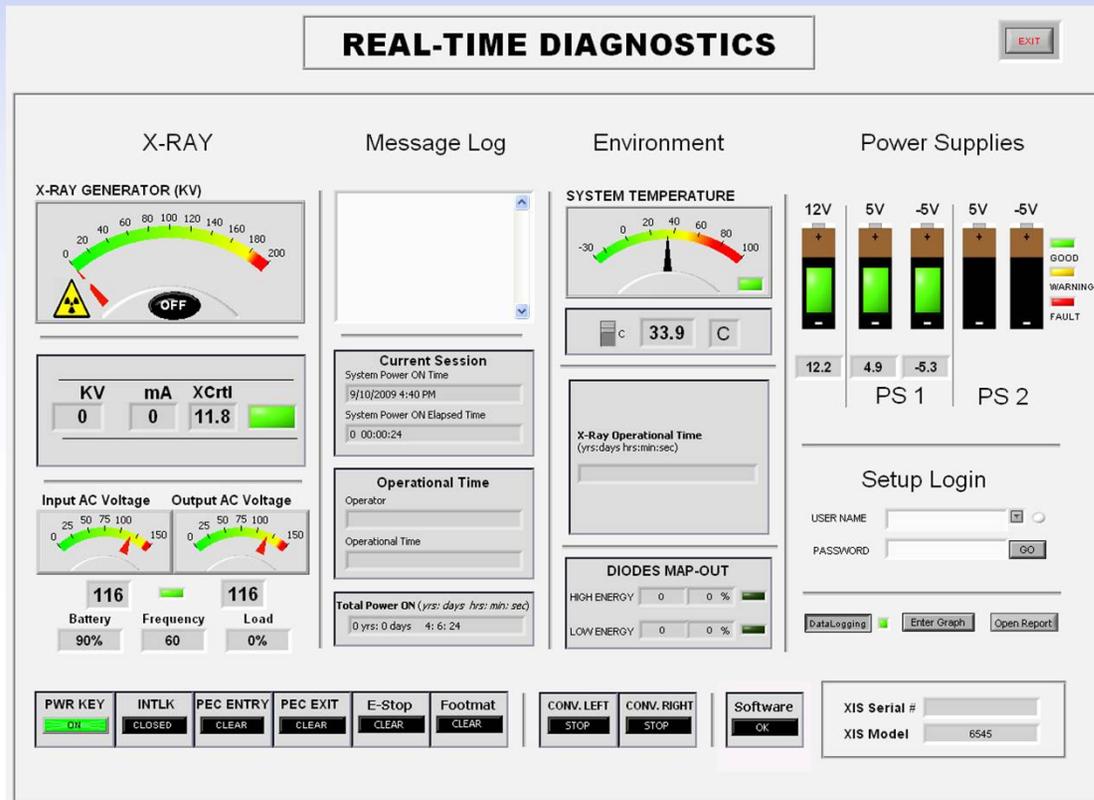
Picture Perfect





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Real Time Diagnostics



- ✓ Quick on-screen system information
- ✓ Increased operational availability
- ✓ Reduced downtime



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Key X-Ray Imaging Characteristics

Tunnel Dimensions

- Size of the object to screen
- Need to identify: What to screen and what are you looking for

Viewing Angle (beam direction)

- Multiple configurations (Ex. Single or Dual View, Cross section)

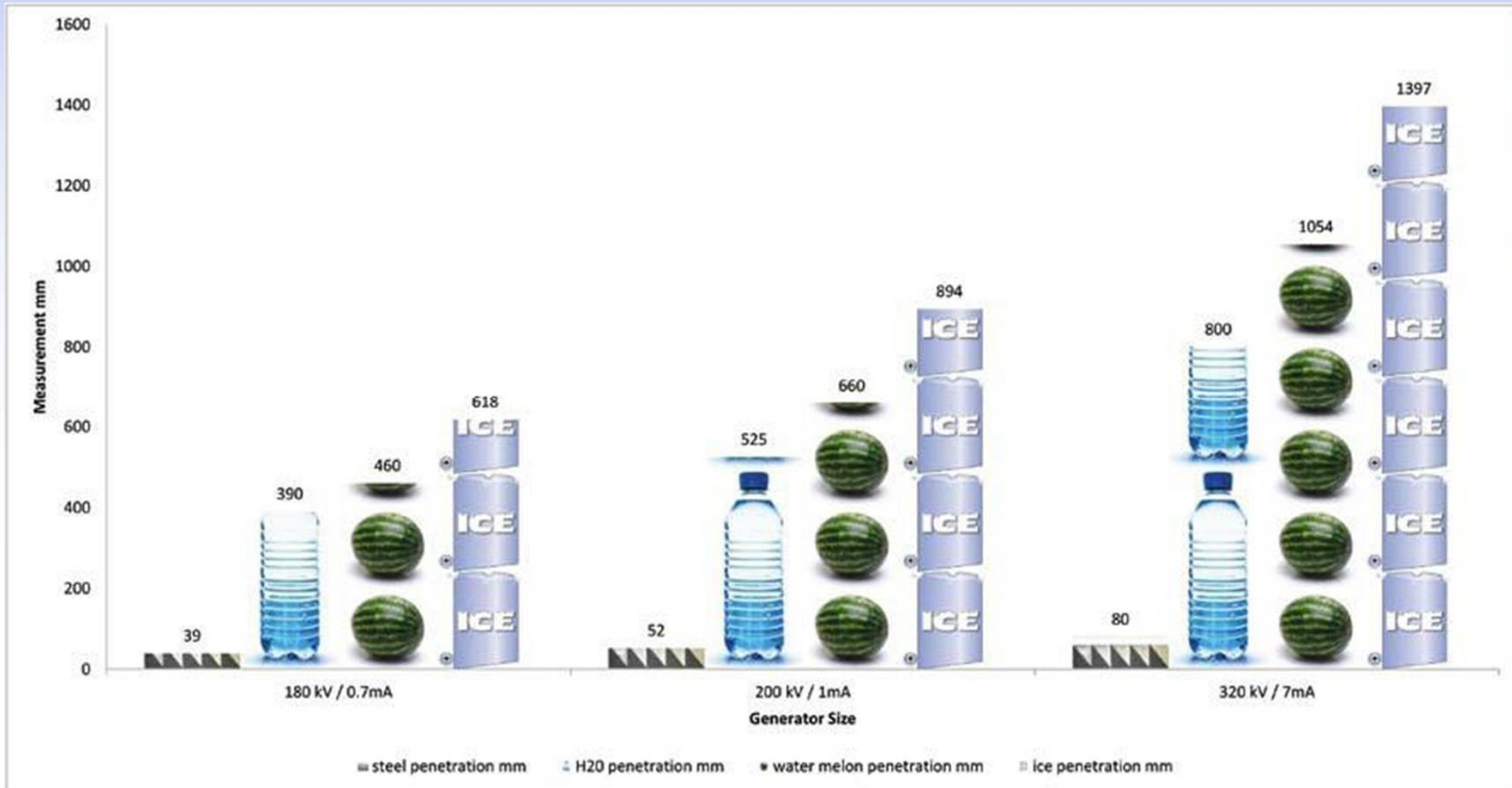
Generator Energy

- Key in Penetration
- High Energy (Large Objects)
- Low Energy (Small Objects)



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Generator Power





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Advanced Cargo Screening



- AERB Certified
- TSA Qualified
- Air Cargo Screening Qualified Technology List (ACSTL)

- XIS-6040
- XIS-6545
- 6545VI
- XIS-6545DV
- XIS-5878
- XIS-7858





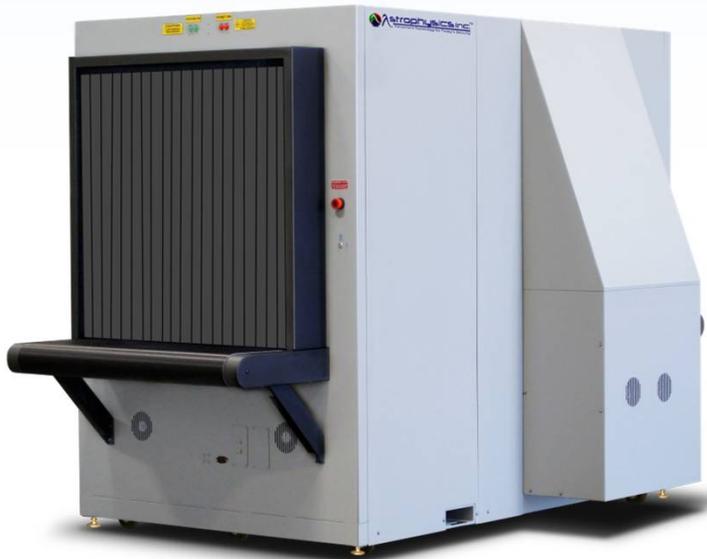
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Advanced Cargo Screening



- AERB Certified
- TSA Qualified
- Air Cargo Screening Qualified Technology List (ACSTL)

- XIS-1080
- XIS-1080D
- XIS-100X
- XIS-100XD
- XIS-100XDV
- XIS-100XDX





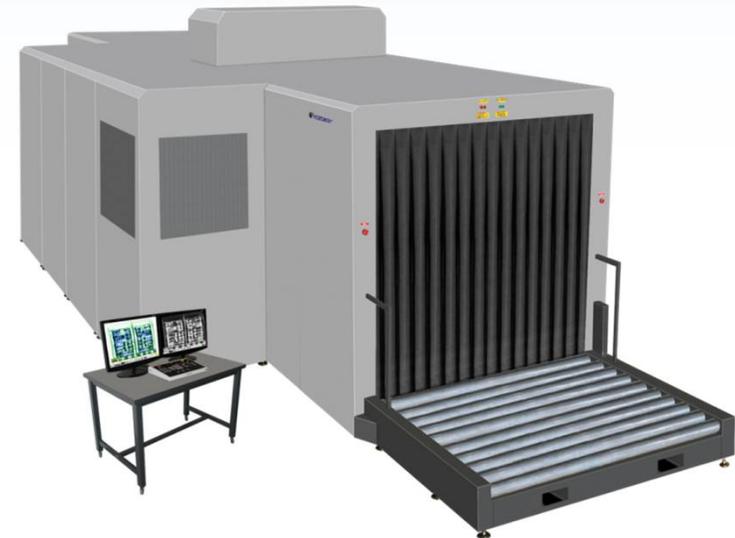
ASTROPHYSICS™

Advanced Cargo Screening



- AERB Certified
- TSA Qualified
- Air Cargo Screening Qualified Technology List (ACSTL)

- XIS-1517
- XIS-1517DV
- XIS-1818
- XIS-1818DV





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Products - HXP

HXP – High Energy Portal

- HXP is used to inspect trucks, containers and vehicles for these threats as well as the verifications of manifests.
- High Throughput & Simple Operation – Can scan 150 trucks per hour
- The Portal is more reliable and cost-effective than a Gantry or Mobile scanners because there are no moving parts to wear out.
- Effective Imaging - All cargo can be examined effectively with high resolution imaging





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HXP-320

DRIVE THROUGH CAR SCANNER

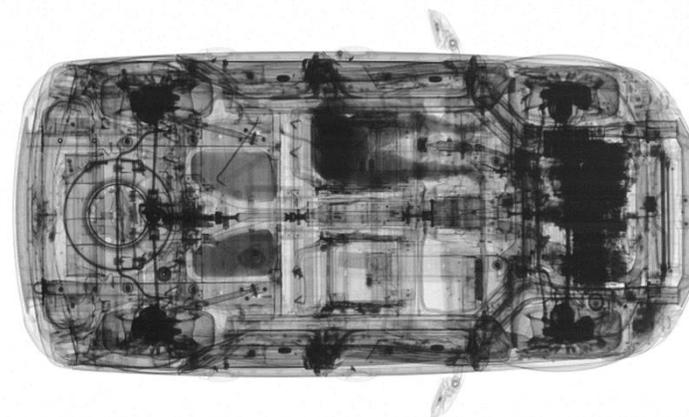


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Products – HXC-320

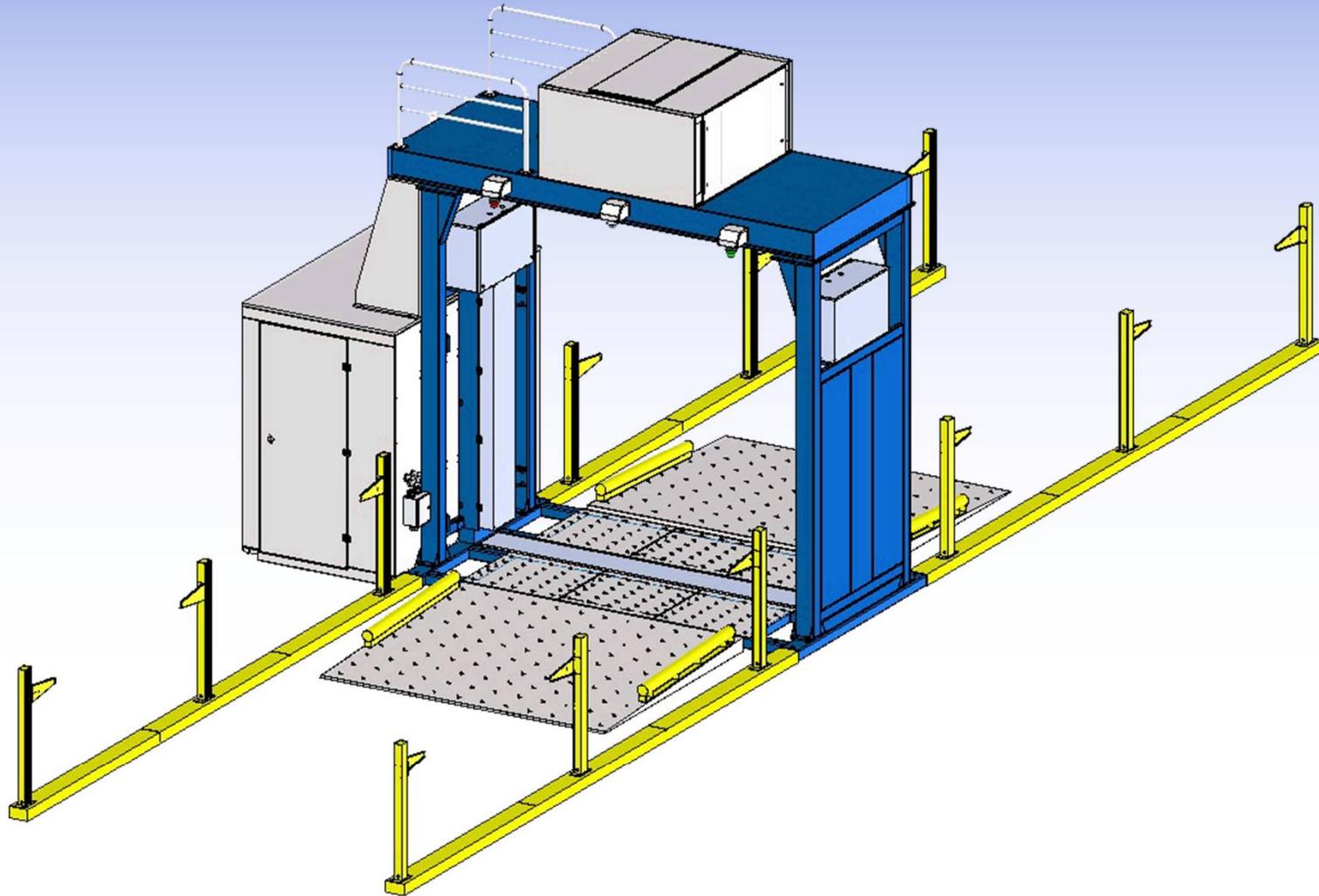
HXC-320 Car Scanner

- Down-shooter
 - Much better for scanning cars than a side shooter
 - Better view of wheels, trunk, engine bay and floor
- Best Penetration – 320kV Generator
 - Definitely much better than competitors' lower energy car scanners
- Options
 - Under view camera
 - License/number plate reader
 - Ramp to enable above ground installation
 - Extra inspection stations
 - Bi-directional scanning
 - Extreme weather adaptation





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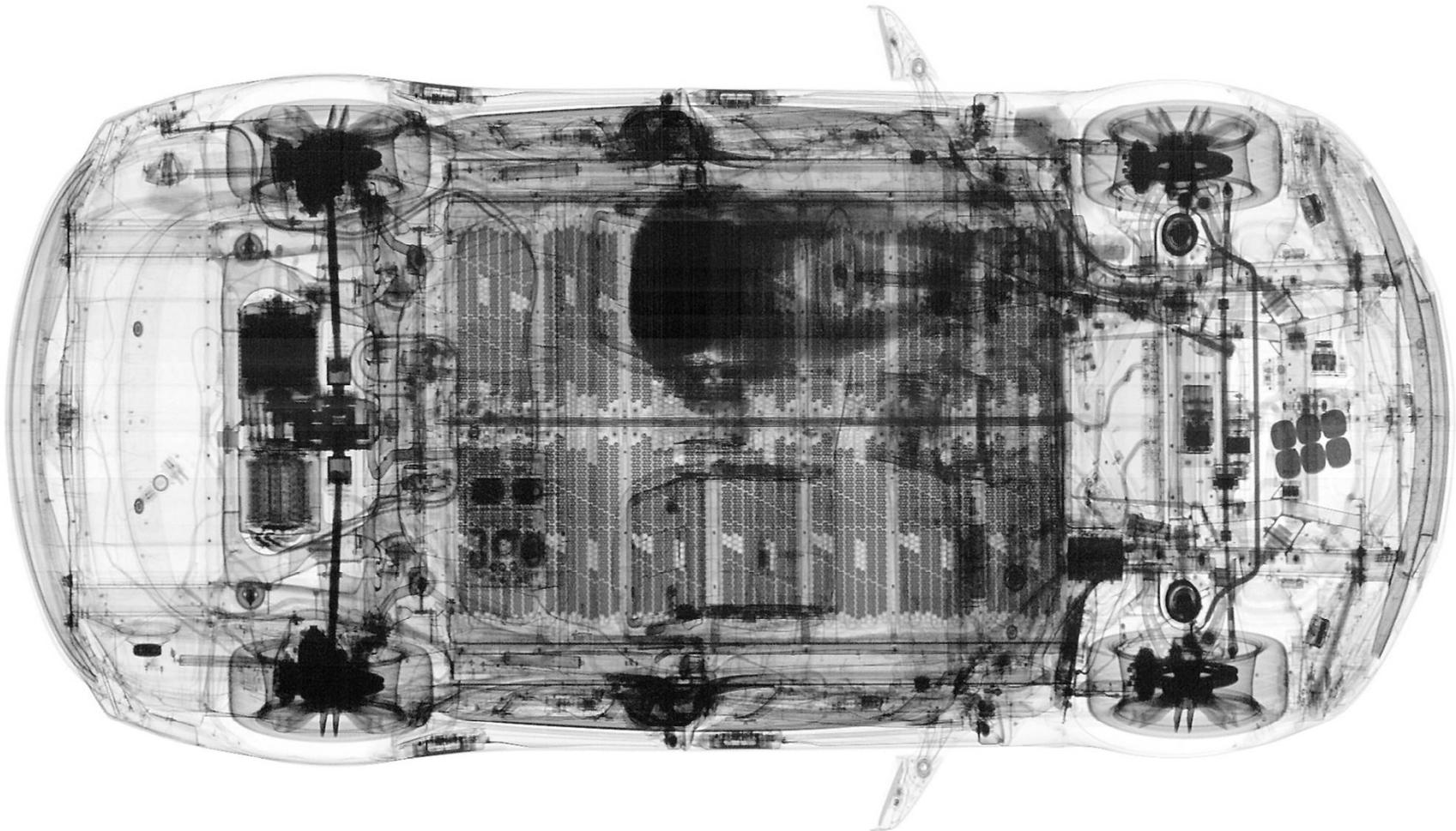


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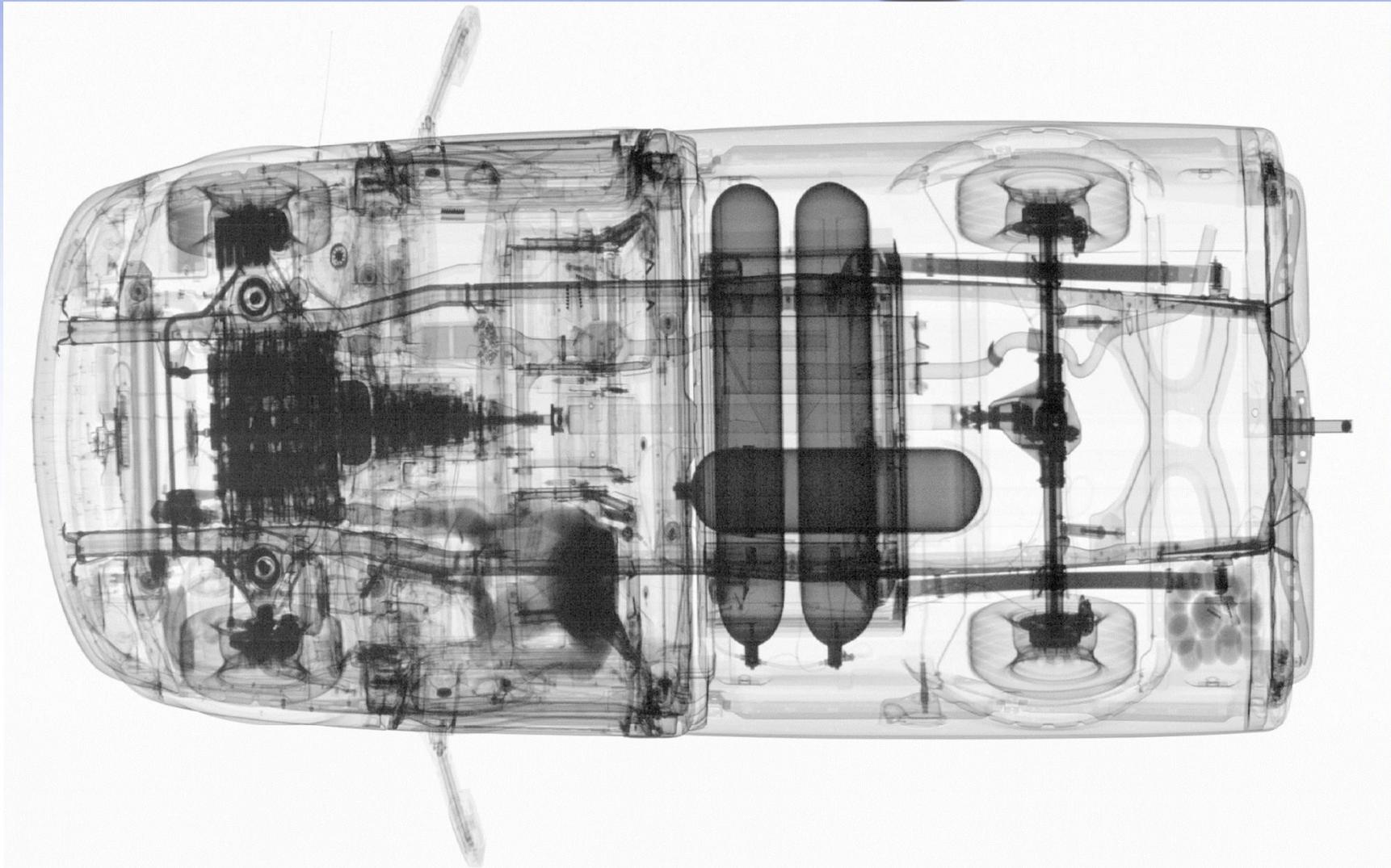


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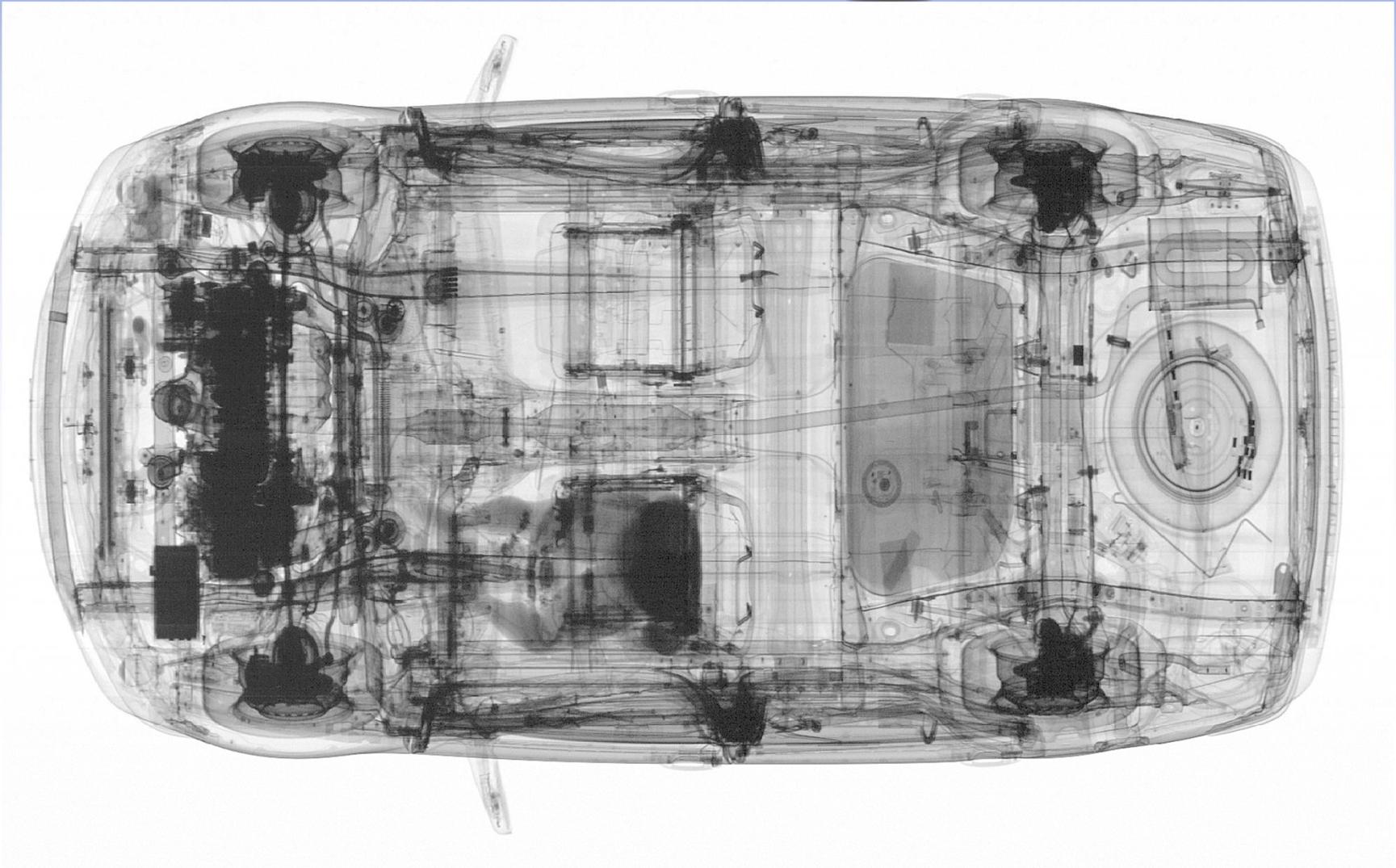


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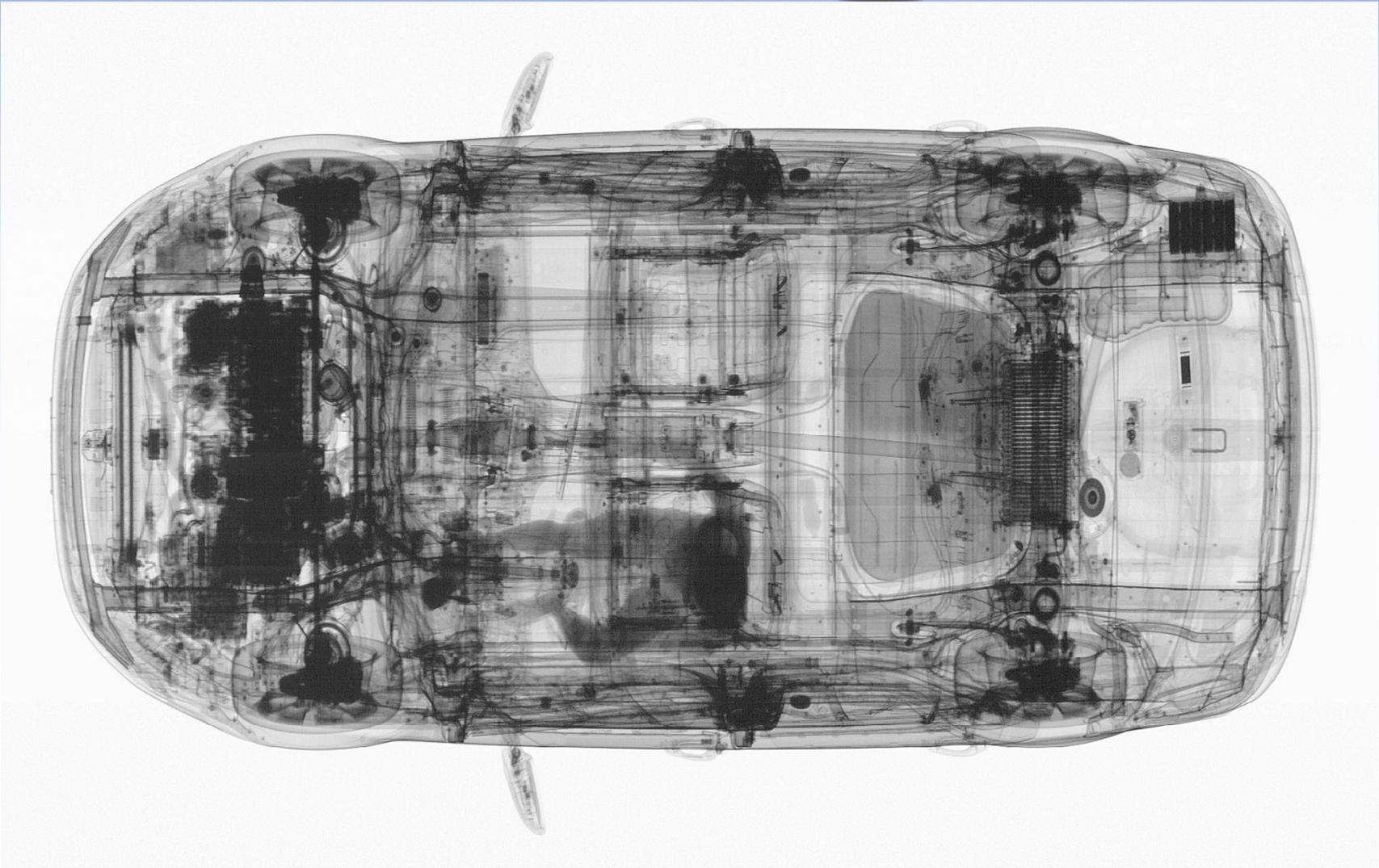


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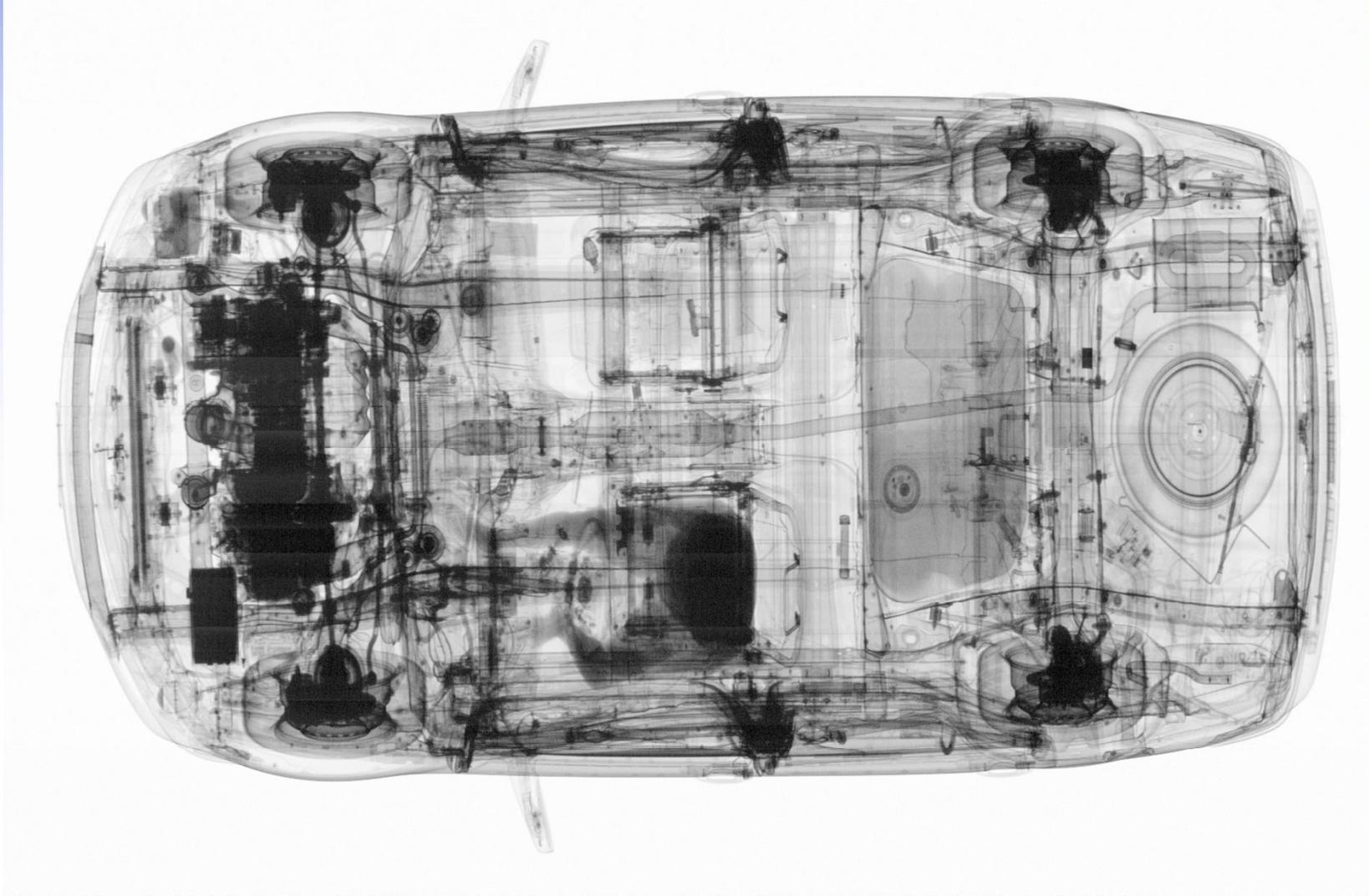


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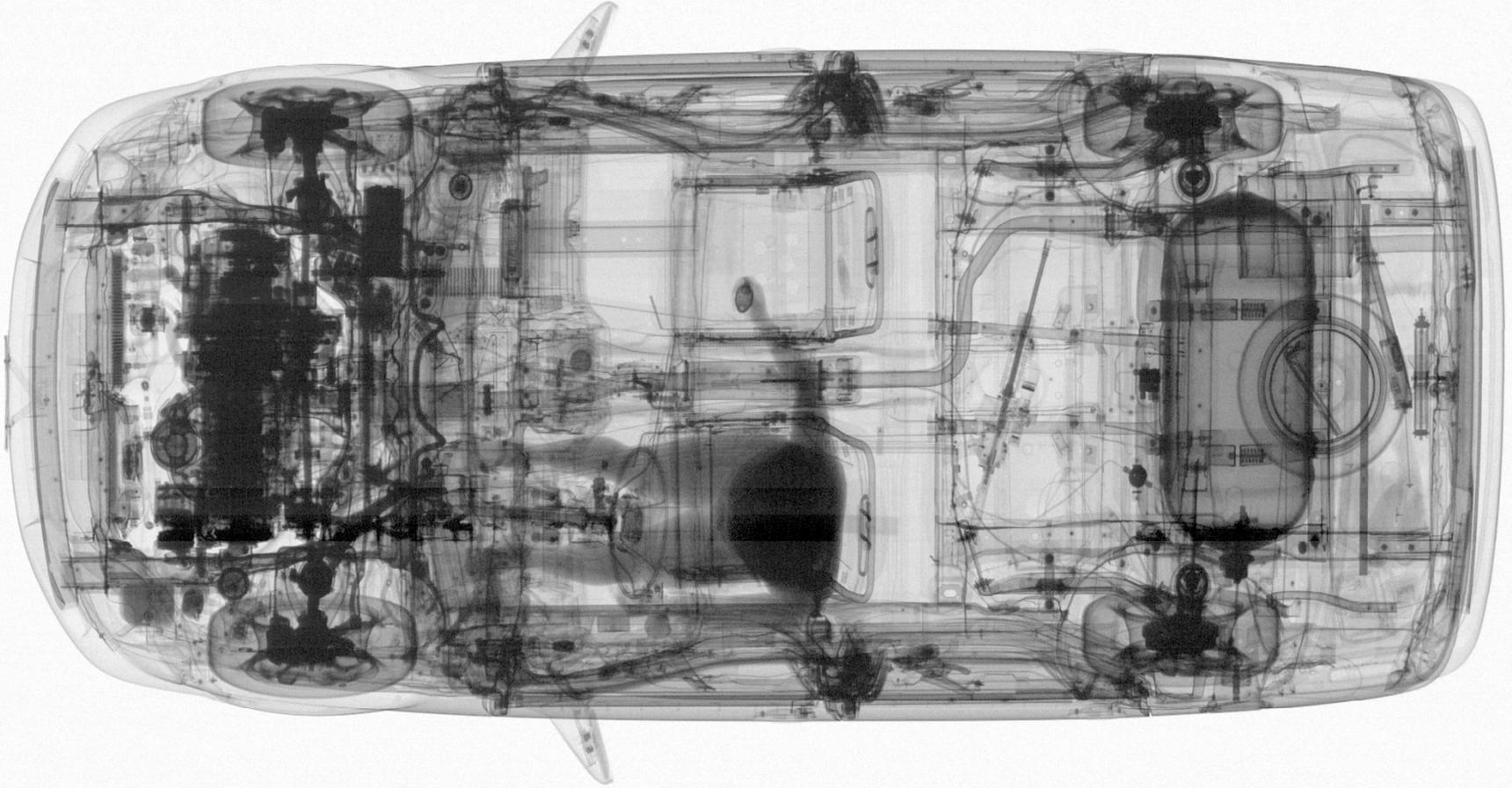


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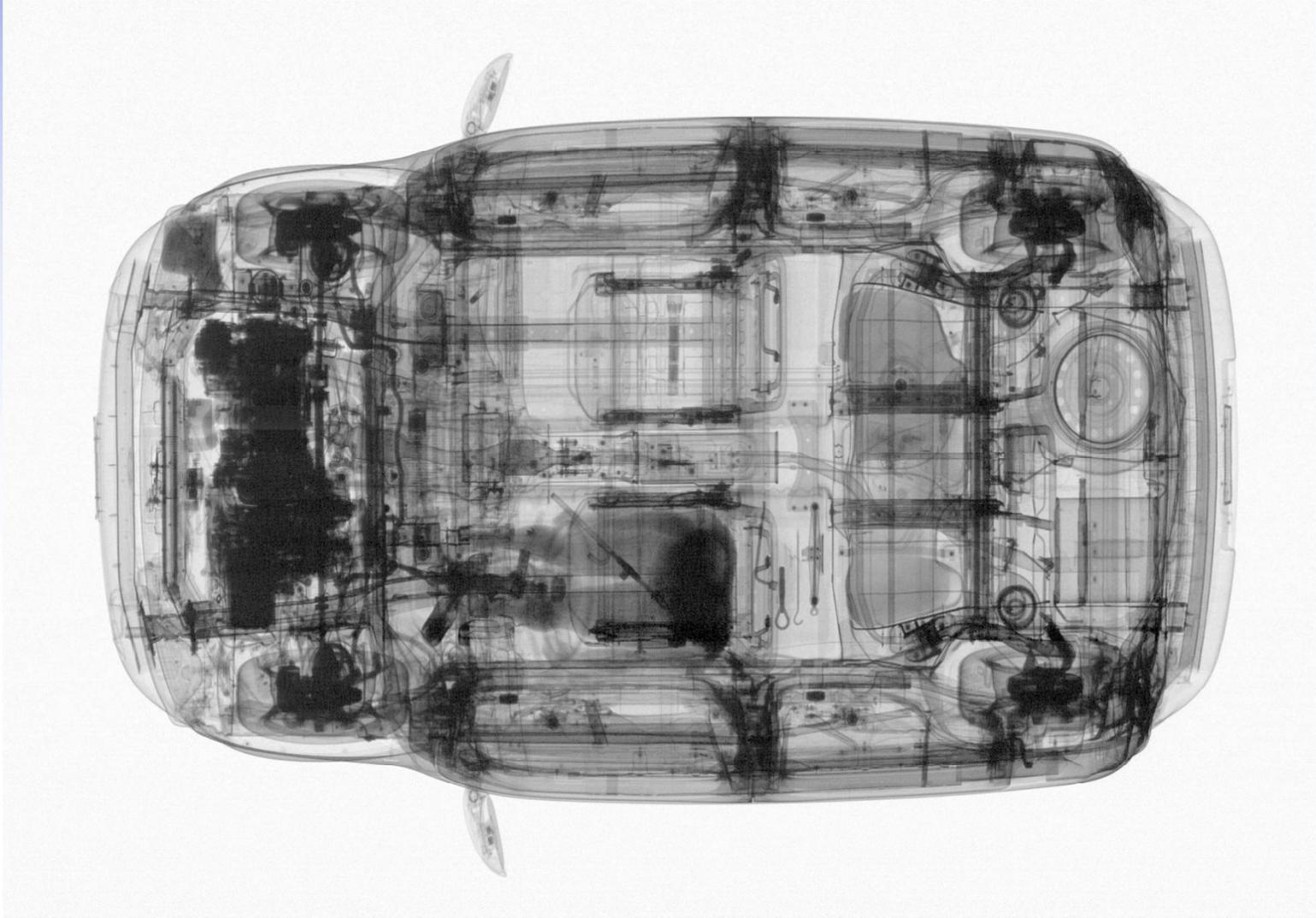


ASTROPHYSICS™



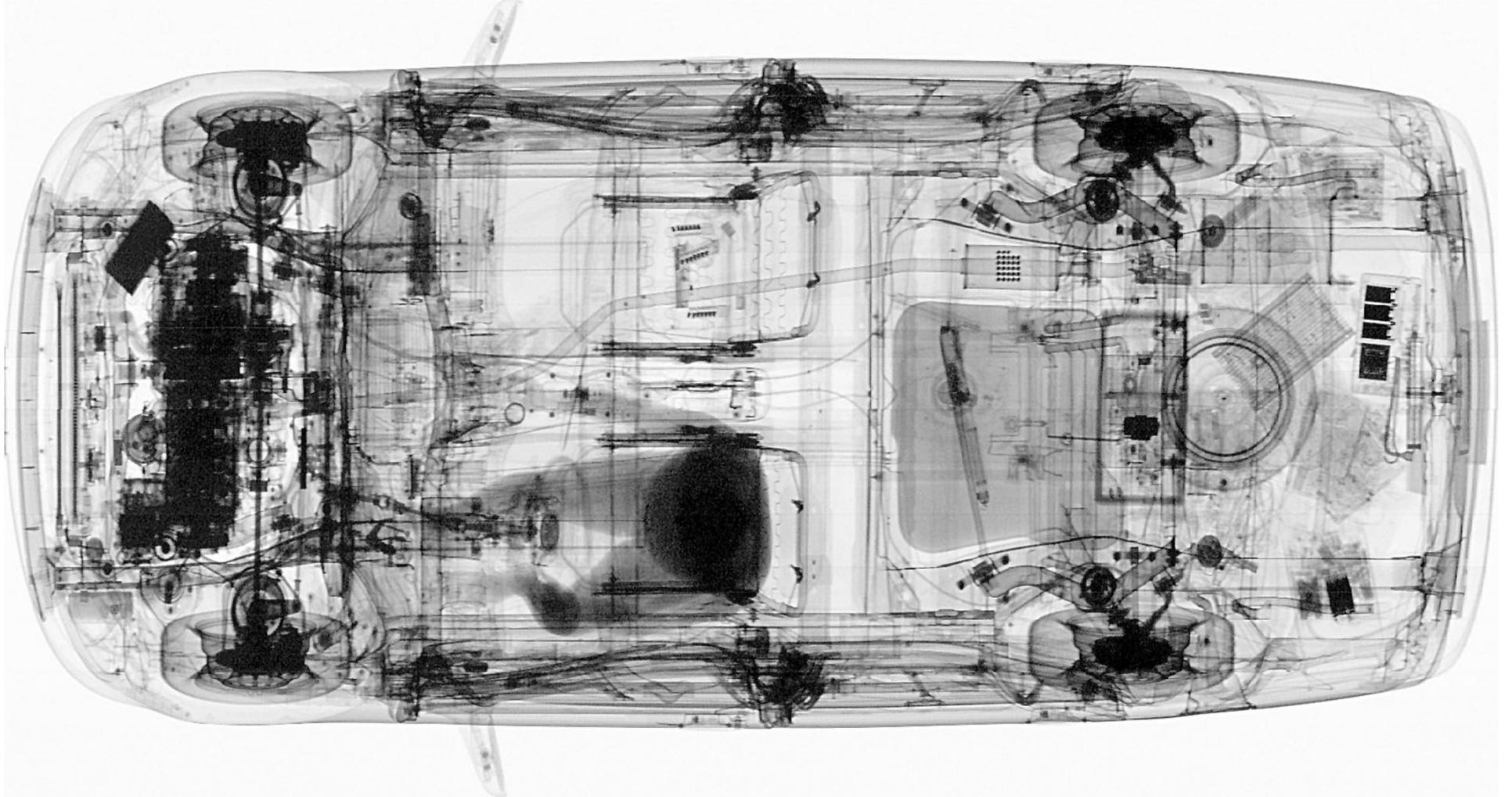


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HXP-75

DRIVE THROUGH TRUCK SCANNER



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STANDARD AND OPTIONAL XIS FEATURES



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XIS FEATURES

Standard Features

- 6 Color Imaging
- 9 Quadrant Zoom
- Atomic Z-Number Measurement
- Auto Image Archiving (150,000)
- Baggage Counter
- Color and Black / White Imaging
- Continuous Scanning
- Continuous Zoom up to 64x
- Vertical Zoom Panning
- Geometric Image Distortion Correction
- High Penetration Function
- Heavy Duty Roller Casters
- Image Annotation
- Image Review
- Save Image RGB & JPEG Conversion
- Material Discrimination
- Multi-Tier Accessibility
- Network Ready
- Organic / Inorganic Imaging
- Operator Training Program
- Picture Perfect
- Print Image Capable
- Pseudo Color
- Real-Time Image Manipulation
- Real-Time Self Diagnostics
- Reverse Monochrome



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6 Color Imaging

- Allows better visual discrimination between items of similar composition.

Z-Number	Material Type	3 Color	6 Color	Examples	Possible Threats
0-8	Organic	Orange	Brown	Wood, oil	C-4, TNT, Semtex
8-10	Low Inorganic	Orange	Orange	Paper	Cocaine, Heroin
10-12	High Inorganic	Green	Yellow	Glass	Propellants
12-17	Light Metals	Green	Green	Aluminum, Silicon	Gunpowder, Trigger Devices
17-29	Heavy Metals	Blue	Blue	Iron, Steel	Guns, Bullets, Knives
29+	Dense Metals	Blue	Violet	Gold, Silver	High-Value Contraband
-	Impenetrable	Black	Black	Lead	Shielding for Above Threats



3 Color Image



6 Color Image

Continuous Scanning

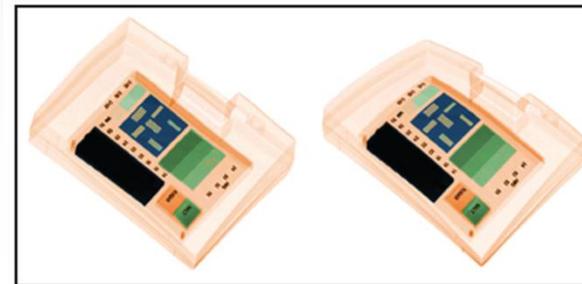
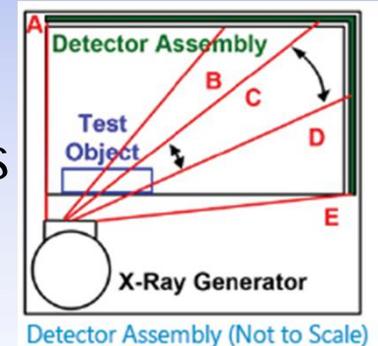
- Typically, X-ray generator only activated when photosensors detect object in tunnel
- Small / Thin objects may not be detected by sensors, activating Continuous Scanning will ensure all objects get scanned regardless of size



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Distortion Correction

- Detector arrays are L-Shaped, resulting in varying distances between the generator and individual detector boards, which may cause images to be skewed
- Our imaging software automatically performs distortion correction, providing more accurate representations of items



Automatic Geometric Correction

Without Geometric Correction

HIPEN

- HIPEN = Hi Penetration
- Adjust darker regions of an image for better Contrast and visibility





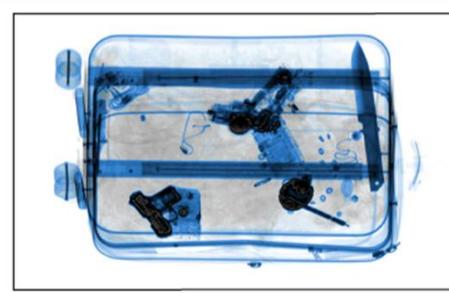
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Organic/Inorganic Imaging

- Organic Mode = Orange (Ex: explosives and narcotics)
- Inorganic mode = Blue (Ex: guns and metal weapons)



Organic Imaging



Inorganic Imaging

Picture Perfect

- Refined, high contrast & more detailed image
- Increases object visibility, especially with objects containing multiple layers
- Can be used in color mode, black and white, and reverse B&W



Picture Perfect



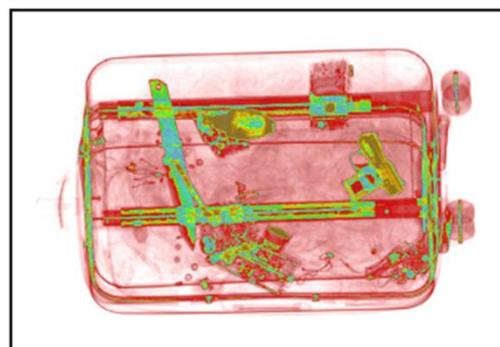
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Pseudo Color

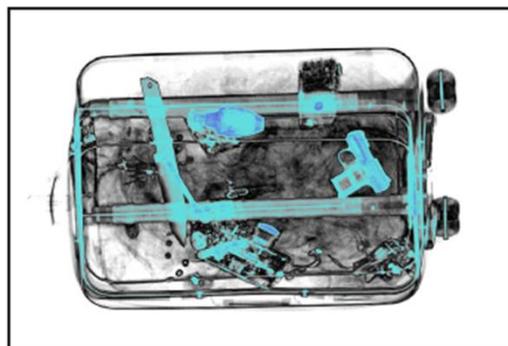
- Applies multiple color palettes to a screened image, creating additional color differentiation
- Use the contrast button to scroll through different color options



Pseudo Color 1



Pseudo Color 2



Pseudo Color 3



Pseudo Color 4



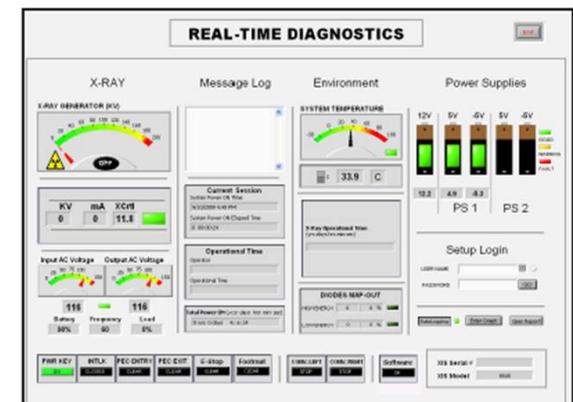
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Operator Training Program (OTP)

- Trains operators on how to use the X-ray Screening System and its various functions
- Utilizes the Advanced Operator Control Panel (AOCP)

Real-Time Diagnostics

- Helps users prevent and/or resolve simple faults
- Monitors system components, including power supply input voltage, x-ray generator, e-stop status, entry/exit sensors, temperature, etc
- In case of a system fault, the word "FAULT" will appear on the Diagnostics screen w/ a description in the Message Log
- As a precaution, conveyor belt & X-rays will stop automatically until fault resolved



Real-Time Diagnostics



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Environmental Operating Kits

- Designed to improve system performance and efficiency in extreme climates.
- 2 Types
 - **Polar Kit** – features a generator-mounted heating pad to keep system at operating temperatures
 - **Tropical Kit** - includes additional temperature controlled fans, multiple humidity-control devices to be placed near the detector array(s)

Density Alert

- Highlights materials are too dense for X-rays to penetrate.
- Can be configured to sound an alarm and/or stop the conveyor belt when a potential threat is detected.
- 2 Types
 - **Standard**: replaces an impenetrable object's dark pixels with red pixels.
 - **Optional**: can be upgraded to draw an ellipse around a highly dense object.





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Why Astrophysics?

- ✓ *We are the Trusted Partner*
- ✓ *We provide the best technology and safety*
- ✓ *We have a dedicated service and support*



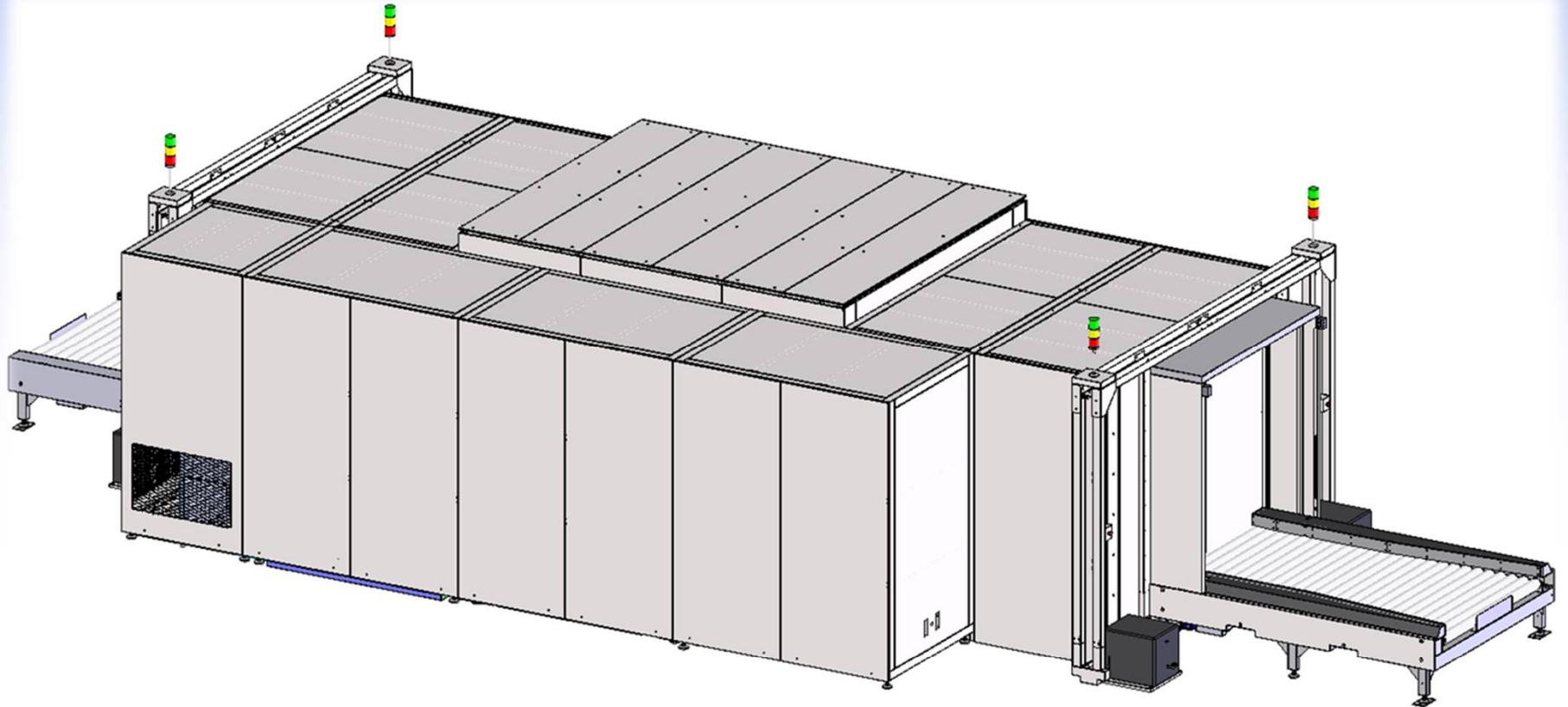
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MVCT

3D PALLET SCANNER



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E:/Working/Mar 8th 2017/Recon/Pallet examples/Screener_006751.dat1 - Common Viewing Station (Beta) : Primary Viewing Station

File View Tools Window Help

Common Resolution Panel

Time Remaining
0 Seconds

Alarm	Type
1	Shield ?

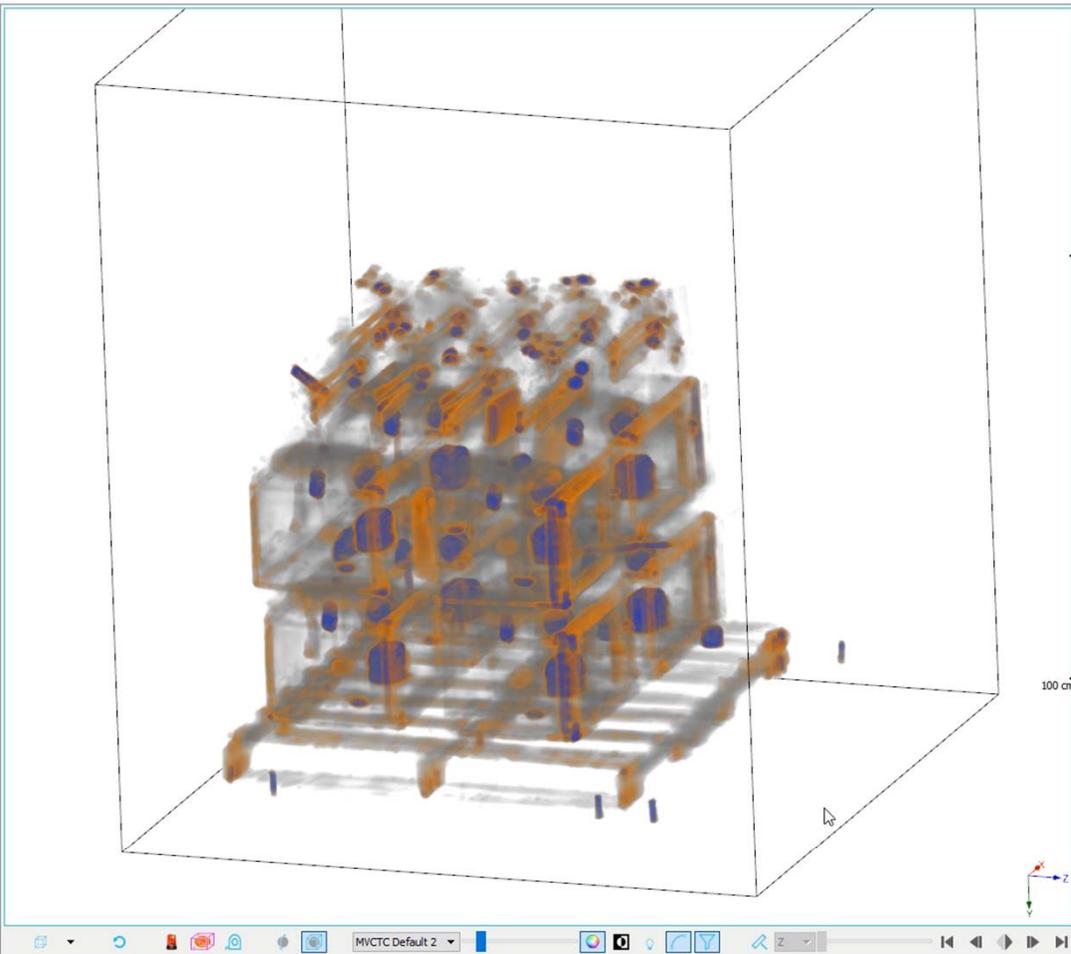
Show All Alarms

Clear Alarm

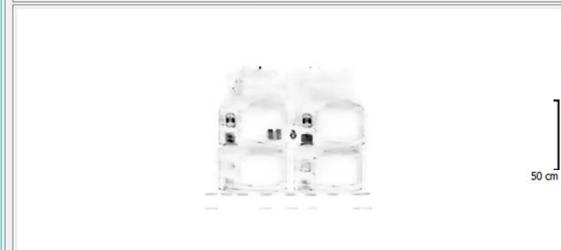
Suspect Alarm

Clear Bag

Suspect Bag



Top View
154 / 316



Exit View
137 / 266



Right View
152 / 284

Bag ID: Screener_006751 Position[cm]: (-, -, -)

15:56 3/15/2017



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E:/Working/Mar 8th 2017/Recon/Pallet examples/Screener_006751.dat1 - Common Viewing Station (Beta) : Primary Viewing Station

File View Tools Window Help

Common Resolution Panel

Time Remaining
0 Seconds

Alarm	Type
1	Shield ?

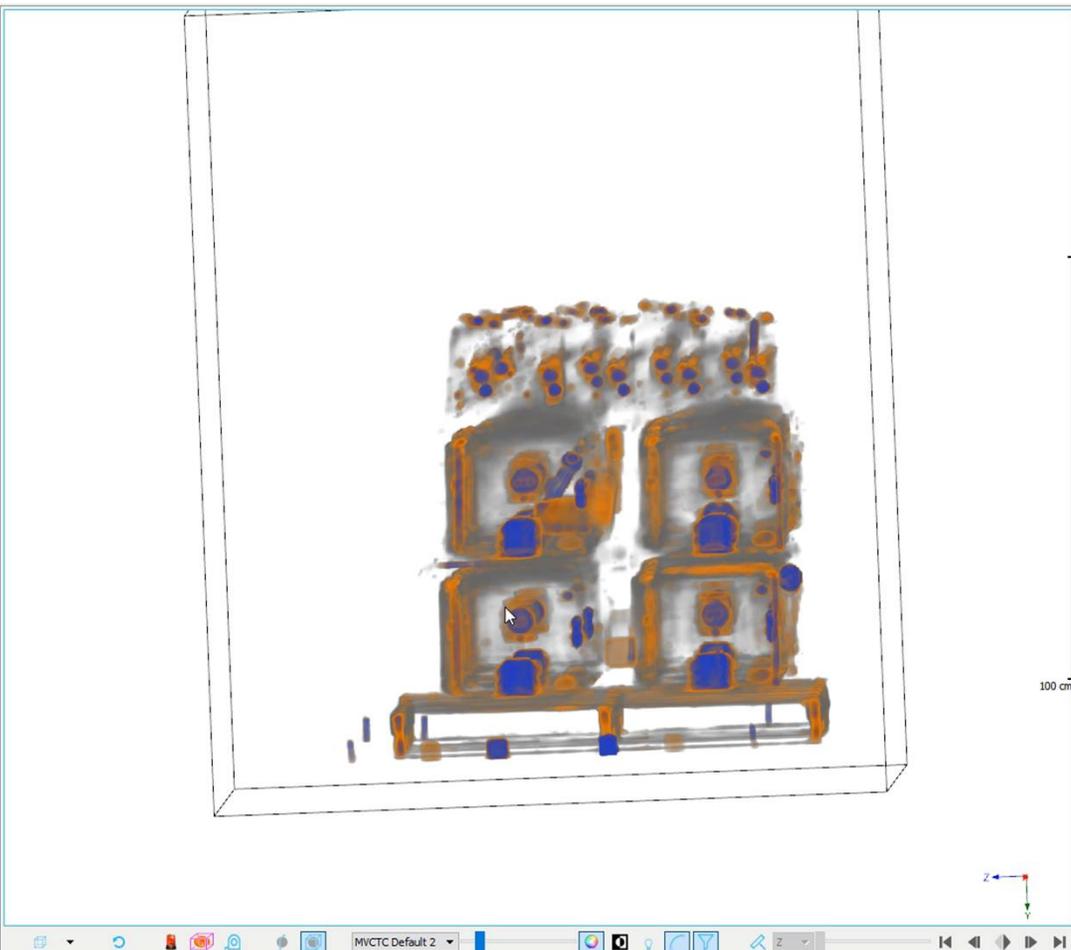
Show All Alarms

Clear Alarm

Suspect Alarm

Clear Bag

Suspect Bag



Top View
154 / 316



Exit View
137 / 266



Right View
152 / 284

Bag ID: Screener_006751 | Position(cm): (79.9, 145.4, 83.1)

15:58 3/15/2017





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Thank You!



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